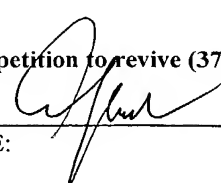
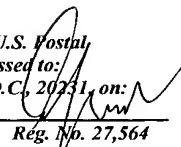


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 JC10 Rec'd PCT/PTO 14 MAR 2002

FORM PTO-1390 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER P/63002-PCT	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371.				U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/088366	
INTERNATIONAL APPLICATION NO. PCT/IB00/01378		INTERNATIONAL FILING DATE September 14, 2000		PRIORITY DATE CLAIMED September 14, 1999	
TITLE OF INVENTION PHASE DETECTOR					
APPLICANT(S) FOR DO/EO/US Udo PURSCHE					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371 (f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)). a. <input type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input checked="" type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11 to 20 below concern document(s) or information included: 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items or information: Receipt Acknowledgement Postcard					

U.S. APPLICATION NO (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO		ATTORNEY'S DOCKET NUMBER	
10/088366		PCT/IB00/01378		P/63002-PCT	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1,040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).				\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	
Total claims	3 - 20 =	0	x \$18.00	\$0.00	
Independent claims	1 - 3 =	0	x \$84.00	\$0.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)				+ \$280.00	
				\$0.00	
TOTAL OF ABOVE CALCULATIONS =				\$890.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0.00	
SUBTOTAL =				\$890.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$0.00	
TOTAL NATIONAL FEE =				\$890.00	
Fee for recording the enclosed assignment (37 CFR 1.21 (h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+ \$0.00	
TOTAL FEES ENCLOSED =				\$890.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$890.00 to cover the above fees is enclosed. b. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>11-1145</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status. SEND ALL CORRESPONDENCE TO:					
KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C. 489 Fifth Avenue New York, New York 10017 (212) 697-3750			SIGNATURE:  Alan Israel NAME 27,564 REGISTRATION NUMBER		
I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail No. <u>EL 337 911 958</u> US in an envelope addressed to: Box: PCT, Commissioner of Patents and Trademarks, Washington, D.C. 20231, on: <u>March 14, 2002</u> (date) <u>Alan Israel</u>  <u>Reg. No. 27,564</u>					

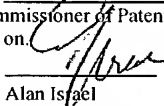
Rec'd PCT/PTO 11 JUL 2002

#6/a

Docket No.: P/63002

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail No. EL 337,912,525 US in an envelope addressed to: Box PCT, Commissioner of Patents and Trademarks, Washington, D C , 20231, on July 11, 2002
(date) 
Alan Israel
Reg No 27,564

International Application No.: PCT/IB00/01378
International Filing Date : September 14, 2000
In re: Application of : Udo PURSCHE
Serial No. : 10/088,366
Deposited : March 14, 2002
For : PHASE DETECTOR

New York, New York
July 11, 2002

PRELIMINARY AMENDMENT

BOX: PCT
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to calculation of the filing fee and before examination, kindly amend the above captioned application as follows:

IN THE CLAIMS:

Please cancel claims 1-3, without prejudice.

Please add the new set of claims 4-12 set forth on the enclosed pages.

IN THE ABSTRACT:

Delete the "Abstract" on the PCT cover sheet and replace it with the "Abstract of the Disclosure" set forth on a separate sheet attached hereto.

REMARKS

An abstract has been provided on a separate sheet; and the claims have been amended to conform to U.S. practice.

Accompanying this communication is a literal English translation of the above identified application, and the fee of \$130.00 as set forth under 37 C.F.R. §1.492(f). The undersigned attorney asks that the English translation be used as the copy for examination purposes as required under 37 C.F.R. §1.52.

If there are any additional charges, or any overpayment, in connection with the filing of this Communication, the Commissioner is hereby authorized to charge any such deficiency, or credit any such overpayment, to Deposit Account No. 11-1145.

Wherefore, an early action on the merits is earnestly solicited.

Respectfully submitted,

KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.

Attorneys for Applicant(s)

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Alan Israel

Registration No. 27,564

ABSTRACT OF THE DISCLOSURE

A phase detector has at least two diodes connected in series, to which a reference signal is supplied via a transformer. In addition, the diodes are connected to a decoupling network which is used to supply an input signal to the diodes and to pick up an output signal. In order to achieve the least possible drift in the output current of the phase detector during changes in the ambient temperature, predefinable capacitances and/or inductances are inserted into the supply lines from the diodes to the transformer to achieve balanced currents which are applied to the diodes. The transformer is also provided with a balancing function, with which the current at its output can be modified.

NEW CLAIMS

4. A phase detector, comprising: at least two series-connected diodes; a repeating coil for feeding a reference signal to the diodes; a decoupling network via which an input signal is placed on the diodes, and an output signal is tapped off the diodes; and adjustable reactances between the diodes and the repeating coil for balancing respective voltages on the diodes.

5. The phase detector according to claim 4, wherein the decoupling network includes resistors and capacitors.

6. The phase detector according to claim 4, and working resistors connected in series with the diodes, both working resistors being connected together at a connection point with a fixed potential, and feed lines between the repeating coil and the diodes, each feed line having at least one of the reactances therein and being connected between a respective diode and a respective working resistor.

7. The phase detector according to claim 4, wherein the reactances are capacitors.

8. The phase detector according to claim 4, wherein the reactances are inductors.

9. The phase detector according to claim 4, wherein the reactances are capacitors and inductors.

10. The phase detector according to claim 4, wherein the repeating coil is adjustable for balancing the voltages on the diodes.

11. The phase detector according to claim 4, wherein the repeating coil is a transformer.

12. The phase detector according to claim 6, wherein the fixed potential is ground.

World Intellectual Property Organization

International Secretariat

International application disclosed based on the Patent Cooperation Treaty (PCT)

International Disclosure Date: March 22, 2001

International Publication No.: WO 01/20350 A1

International Patent Classification⁷: G01R 25/00

International Filing No.: PCT/IB00/01378

International Filing Date: September 14, 2000

Filing Language: German

Publication Language: German

Priority Data: 199 43 956.7, September 14, 1999, Germany

Applicant (for all Designated States except the US): Marconi Communications GmbH,
Backnang, Germany

Inventors; and

Inventors/Applicants (US only): Udo Pursche, Dresden, Germany

Representative: Ronald Camp, Marconi Intellectual Property, Essex, Great Britain

Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

Designated States (regional): ARIPO Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European Patent (AT, BE, CH, CY, DE, DK, ES, FI, ...)

Title: Phase Detector

//figure and English abstract//

Prior art

The present invention concerns a phase detector having at least two series-connected diodes, to which a reference signal is fed via a repeating coil and which are connected to a

decoupling network by which an input signal is applied to the diodes and an output signal is taken off that corresponds to the phase deviation between the input signal and the reference signal.

This type of phase detector is known from DE 197 03 889 C1. In this known phase detector, the circuit unbalance present is eliminated by the fact that working resistors connected in series with the diode are correspondingly altered so that both working resistors are connected to each other via a variable resistor. With this expedient, circuit balance can be adjusted only for one temperature. However, if the phase detector is to be used in a larger temperature range, the output signal of the known phase detector will exhibit a temperature-dependent drift. The task underlying the invention is therefore to provide a phase detector of the type just mentioned whose circuit balance is retained over the largest possible temperature range and therefore keeps drift of the output signal of the phase detector as low as possible during a fluctuation of the surrounding temperature.

Advantages of the invention

The stated task is solved with the features of Claim 1, in that, to make the voltages lying on the diode of the phase detector balanced, tunable capacitances and/or tunable inductances are introduced into the feed lines from the diodes to a repeating coil that supplies a reference signal and/or the repeating coil is provided with an adjustment with which the voltages at its outputs can be varied. With adjustable capacitances and/or inductances or a tunable repeating coil, unaltered balance of the circuit can be set over a broad temperature range.

Advantageous modifications of the invention are apparent from the subclaims.

Accordingly, the decoupling network for the input and output signal, consisting of R/C elements, is connected between the two diodes.

A working resistor is connected in series to each diode and both working resistors are connected together at a connection point with fixed potential, preferably ground. The feed lines of the repeating coil with the tunable capacitances and/or inductances inserted in them are connected between the corresponding diode and its working resistor.

Description of a practical example

The single figure of the drawing shows a phase detector that generates an output signal U3 dependent on the phase deviation between a reference signal U1 and an input signal U2.

The phase detector has two series-connected homopolar diodes V1 and V2, a working resistor R1, R2 being series-connected to each diode V1, V2. Both working resistors R1 and R2 are connected at a connection point 4 that lies at a fixed potential that is preferably ground potential.

The reference signal U1 lies at an input 1 of a repeating coil UT, whose outputs are connected to diodes V1 and V2 between the corresponding diodes V1 and V2 and the corresponding working resistors R1 and R2. The repeating coil UT serves to divide the reference signal U1 symmetrically to the two diodes V1 and V2. The capacitors C1 and C2 introduced into the feed lines from the repeating coil UT to the diodes V1 and V2 prevent dc shorting of the diodes V1 and V2 through repeating coil UT.

An R/C decoupling network consisting of the two capacitors C3 and C4 and resistor R4 is connected between the two diodes V1 and V2. The input signal U2 is applied between the connection 2 of capacitor C3, whose other end is connected between the two diodes V1 and V2 and ground. The series circuit consisting of resistor R4 and capacitor C4 lies with one end between the two diodes V1 and V2 and is placed at ground potential with the other end. The voltage developing via capacitor C4 between connection point 3 and ground is the output signal U3 dependent on the phase deviation between the reference signal U1 and the input signal U2. Diodes V1 and V2 are connected conducting through the reference signal U1 and a capacitor C4 is charged to different levels via resistor R4 according to the phase deviation between the reference U1 and the input signal U2. The charge voltage of capacitor C4 can be tapped as gauge of the phase difference between the reference signal U1 and the input signal U2 as output signal U3. The capacitor C3 blocks the input signal U2 in terms of direct current.

In order for the output signal U3 to reflect without distortion the phase difference between the reference signal U1 and the input signal U2, measures must be taken to obtain circuit balance. Without such special measures, the circuit can exhibit a certain unbalance because the voltages UR1, UR2 dropping on the working resistors R1, R2 can be of unequal size

because of different partial voltages URF1, URF2 on diodes V1, V2. Different partial voltages URF1 and URF2 on diodes V1 and V2 can arise from deviations in the design of the diodes, from manufacturing unbalance in the repeating coil UT, or from component and assembly tolerances. The following equations (1) and (2) give the temperature dependence of the voltage drops UR1 and UR2 on the two working resistors R1 and R2.

$$\frac{d}{dt} \left[R1 - IS \cdot \left(e^{\frac{q \cdot URF1}{m \cdot k \cdot T}} - 1 \right) \right] = - \frac{R1 \cdot IS \cdot URF1}{m \cdot k \cdot T^2} \cdot e^{\frac{q \cdot URF1}{m \cdot k \cdot T}} \quad (1)$$

$$\frac{d}{dt} \left[R2 - IS \cdot \left(e^{\frac{q \cdot URF2}{m \cdot k \cdot T}} - 1 \right) \right] = - \frac{R2 \cdot IS \cdot URF2}{m \cdot k \cdot T^2} \cdot e^{\frac{q \cdot URF2}{m \cdot k \cdot T}} \quad (2)$$

In equations (1) and (2), T denotes the temperature, IS the diode reverse saturation current, q denotes the elementary charge, k denotes Boltzmann's constant, and m a gradation exponent. As equations (1) and (2) show, the temperature coefficients of the two voltages UR1 and UR2 dropping on working resistors R1 and R2 are independent of the different partial voltages URF1 and URF2 being rectified by diodes V1 and V2 and unequal. If, as occurs in the known phase detector described at the outset, balancing is carried out merely by varying the working resistances, circuit balance can only be achieved for constant temperature. With the expedients described below, the circuit balance is produced by the fact that the partial voltages URF1 and URF2 being rectified are balanced on diodes V1 and V2 to equal values so that both the voltages drops UR1 and UR2 on the working resistors R1 and R2 and the temperature coefficients are of the same magnitude.

The stated circuit balance can be implemented over a broad temperature range owing to the fact that the capacitors C1 and C2 can be balanced in the feed lines between the repeating coil UT and diodes V1 and V2. In addition to the adjustable capacitors C1 and C2 or instead of them, adjustable inductances L1 and L2 can also be provided in the feed lines.

Balancing of the circuit can also be carried out by adjustment of the repeating coil UT so that the voltages at its outputs can be varied. All three adjustment possibilities of capacitances C1, C2, inductances L1, L2 and repeating coil UT can be carried out alone or in combination with each other.

An adjustment of the repeating coil UT can be made possible by the fact that it has secondary windings arranged on a coil support and a ferrite core penetrating both windings is adjustable in its penetration depth by a thread. Depending on whether the ferrite core is situated more in the upper or lower windings, a larger voltage is induced in the upper or lower winding so that voltages of different size URF1, URF2 are formed.

Adjustment of the capacitances C1, C2 and the inductances L1, L2 can be accomplished by the fact that tunable concentrated components are used. If the capacitances C1, C2 and inductances L1, L2 are implemented by means of planar line structures, adjustments can occur by varying the lines by means of a laser or soldering or bonding on of additional line sections.

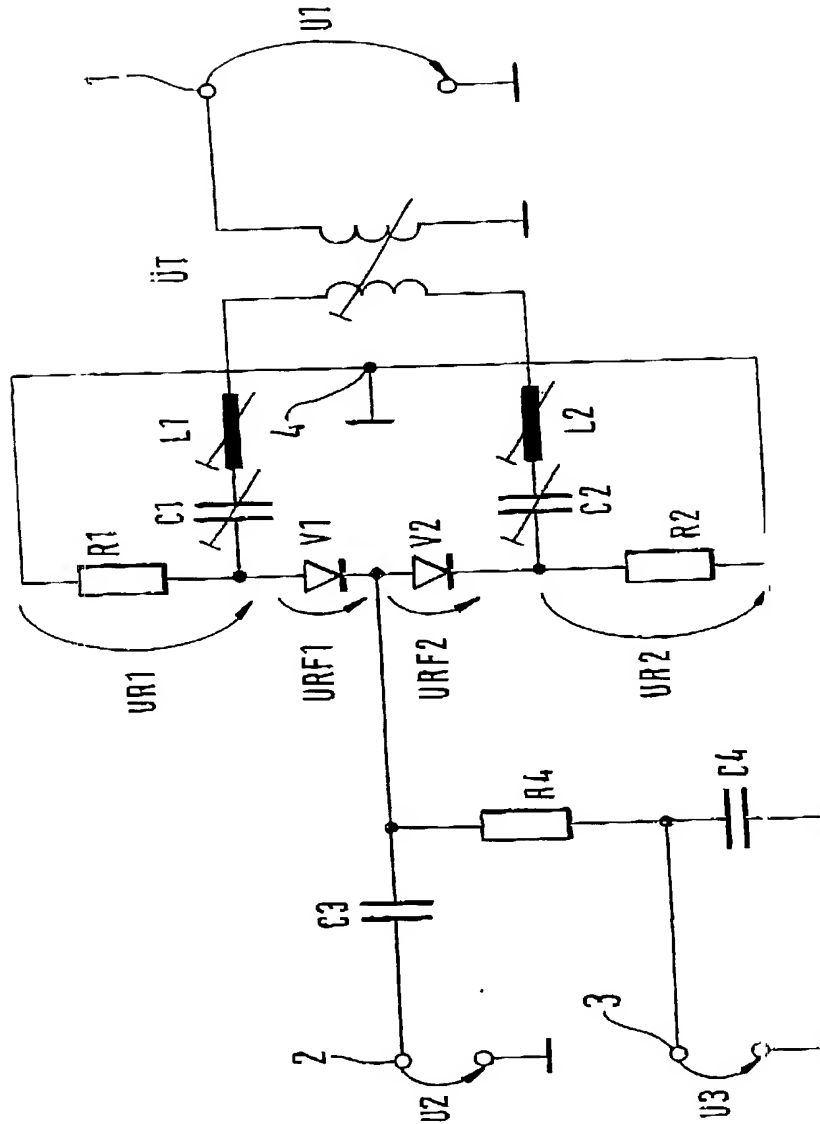
Claims

1. Phase detector having at least two series-connected diodes (V1, V2), to which a reference signal (U1) is fed via a repeating coil (UT), and which are connected to a decoupling network (R4, C3, C4) via which an input signal (U2) is placed on diodes (V1, V2) and an output signal (U3) is tapped, which corresponds to the phase position between the input signal (U2) and reference signal (U1), characterized by the fact that to make the voltages (URF1, URF2) lying on diodes (V1, V2) balanced, adjustable capacitances (C1, C2) and/or adjustable inductances (L1, L2) are inserted into the feed lines from the diodes (V1, V2) to the repeating coil (UT) and/or the repeating coil (UT) is provided with an adjustment with which the voltages at its outputs can be varied.

2. Phase detector according to Claim 1, characterized by the fact that the decoupling network for the input (U2) and output signal (U3), consisting of R/C elements (R4, C3, C4) is connected between the two diodes (V1, V2).

3. Phase detector according to Claim 1, characterized by the fact that a working resistor (R1, R2) is connected in series with each diode (V1, V2) and both working resistors (R1, R2) are connected together at a connection point (4) with fixed potential, preferably ground, and that the feed lines of the repeating coil (UT) with the adjustable capacitances (C1, C2) and/or inductances (L1, L2) inserted in them are connected between the corresponding diodes (V1, V2) and their working resistors (R1, R2).

[Fortsetzung auf der nächsten Seite]



Type a plus sign (+) inside this box → ☐0010/PTO
Rev. 6/95U.S. Department of Commerce
Patent and Trademark Office**DECLARATION FOR
UTILITY OR DESIGN
PATENT APPLICATION**

☐ Declaration OR
Submitted
with Initial Filing

☒ Declaration
Submitted after
Initial Filing

Attorney Docket Number

P/63002

First Named Inventor

PURSCHE Udo

COMPLETE IF KNOWN

Application Number

10/088,366

Filing Date

MARCH 14, 2002

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

PHASE DETECTOR

(Title of the Invention)

the specification of which

☐ is attached hereto
OR

☒ was filed on (MM/DD/YYYY)

March 14, 2002

as United States Application Number or PCT International
U.S. Serial No. 10/088,366

Application Number

PCT/IB00/01378

and was amended on (MM/DD/YYYY)

September 14, 2000

(if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37 Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119 (a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365 (a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
19943956.7-35	DE	Sept. 14, 1999 09-14-1999	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PCT/IB00/01378	INTERNATIONAL	Sept. 14, 2000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

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Page 2

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto.

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☐ Firm Name Customer Number or label
☒ OR
☒ List attorney(s) and/or agent(s) name and registration number below:

Name	Registration Number	Name	Registration Number
David B. Kirschstein, Esq.	17,244		
Alan Israel, Esq.	27,564		
Martin W. Schiffmiller, Esq.	30,421		

☐ Additional attorney(s) and/or agent(s) named on a supplemental sheet attached hereto.

Please direct all correspondence to: ☐ Customer Number or label OR ☒ Fill in correspondence address below

Name KIRSCHSTEIN, OTTINGER, ISRAEL & SCHIFFMILLER, P.C.

Address 489 Fifth Avenue

Address

City New York

State New York

ZIP 10017-6105

Country United States

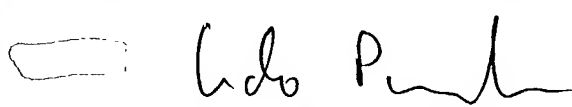
Telephone (212) 697-3750

Fax (212) 949-1690

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor

Given Name	<u>Udo</u>	Middle Initial		Family Name	<u>PURSCHE</u>	Suffix e.g. Jr.	
Inventor's Signature						Date	<u>08 MAY 2002</u>
Residence: City	<u>Dresden</u>	State	<u>DE</u>	Country	<u>(Germany)</u>	Citizenship	<u>(Germany) DE</u>
Post Office Address	<u>Barbarastrasse 50, 01129 Dresden (DE)</u>						
Post Office Address	<input type="text"/>						
City	<u>Dresden</u>	State		Zip	<u>01129</u>	Country	<u>DE (Germany)</u>
						Applicant Authority	

☐ Additional inventors are being named on supplemental sheet(s) attached hereto